REMARKS

Claims 1 to 16 are in the application, with Claims 1 and 8 having been amended and Claims 11 to 16 having been added. Claims 1, 11 and 14 are the independent claims herein. Reconsideration and further examination are requested.

The Notice of Draftsperson's Patent Drawing Review enclosed with the Office Action references drawings filed on April 9, 1999. However, in a Letter Transmitting Formal Drawings dated May 12, 1999, Applicant substituted new formal drawings for those filed on April 9, 1999. Applicant respectfully requests that the substituted formal drawings be reviewed by the Draftsperson.

By the Office Action, Claims 1 to 10 are rejected under 35 U.S.C. § 103(a) over an alleged admission of prior art in Applicant's specification in view of U.S. Patent No.5,875,034 (Shintani). For at least the following reasons, Applicant traverses the claim rejection.

Claims 1 to 16 involve negotiation between two devices such as an image output device and an image input device, so as to transfer image data between the devices, and so as to negotiate whether exportable image processing functionality on one device should be exported to the other device so as to increase overall image transfer efficiency.

On page 2 of the present Application, Applicant describes the JetSend™ protocol, which is a device-to-device communications protocol for local and wide area networks that allows network devices to intelligently negotiate a common data type for exchanging image data, and to provide device status.

More particularly, in a case that image data is exchanged between an image input device (such as a scanner or digital camera) and an image output device (such as a printer or facsimile or optical projector) and according to the JetSend negotiation, the

image input device and the image output device jointly negotiate for a common data type for the image data (e.g., color, grayscale, etc.), based on the pre-existing image processing capabilities of each of the input and output devices, and thereafter exchange the image data in accordance with the negotiated data type.

Additional details of the information exchange according to the JetSend protocol is provided in the present Application, beginning on the bottom of page 2 and extending onto page 3. As a precursor to the exchange of the image data, the negotiating devices can negotiate the data type of the image data based on the pre-existing capabilities of each device. In the case of an image data exchange between a color scanner and a monochrome printer, the scanner might include image processing capabilities so as to provide image data according to data formats that include full color image data and grayscale image data. The printer, on the other hand, might include image processing capabilities that allow it to accept full color image data, grayscale image data, and black-and-white image data, and thereafter to process such data so as to printout a monochrome image.

Accordingly, for this information exchange, the scanner would scan in an image, convert the image into grayscale data using pre-existing capabilities of the scanner, and transmit the grayscale data over the bi-directional communication interface to the printer; whereupon the printer would receive the grayscale image data from the bi-directional communication interface, convert the grayscale image data to monochrome image data using pre-existing capabilities of the printer, and print out the monochrome image data.

The data conversions that are performed in the above example use functionality that existed in the respective devices prior to the negotiations, and no

- 8 -

functionality was described as being exchanged in the example discussed above and on pages 2 and 3 of the present Application. The determination of which device performs the conversion device is dictated by the image processing functionality that each device has prior to the start of the negotiation. Since the negotiation for exchange is limited by the pre-existing image processing functionality of each device, resulting negotiations can lead to a data transfer that is inefficient and time consuming.

The present invention addresses the foregoing, by negotiating an assignment of image processing functionality that achieves an efficient exchange of information between two devices, and by exchanging data processing functionality between the devices as needed. Among other things, it is possible in doing so to take advantage of better performance on one device or another.

More particularly, Claim 1 concerns a method of negotiating an exchange of image processing functionality between first and second devices over a bi-directional communication link, comprising the steps of exchanging function code descriptions between the first and second devices, the function code descriptions including information concerning functionality respectively available in the first and second devices, together with information concerning whether such functionality is exportable to other devices, negotiating an assignment of image processing functionality between the first and second devices, with the overall image processing functionality effecting an efficient image transfer between the first and second devices, and exchanging program code that implements image processing functionality between the first and second devices in a case where the negotiated assignment indicates that functionality in one of the first and second devices is needed by the other of the first and second devices, wherein the program code is executed by the other of the first and second devices.

The cited portions of the present Application, i.e., page 1, lines 21 to 22, page 2, lines 1 to 16 and lines 36 to 37, and page 3, lines 1 to 24), are not seen to teach or suggest the foregoing features. More particularly, the cited portions of Applicant's specification are not seen to teach or suggest at least the feature of exchanging program code that implements image processing functionality between first and second devices in a case where the negotiated assignment indicates that functionality in one of the first and second devices is needed by the other of the first and second devices, and/or the feature of negotiating an assignment of image processing functionality that effects an efficient image transfer.

As discussed in pages 1 to 3 of the present Application, JetSend is seen to allow for device-to-device negotiation of a data type. As a result of the data type negotiations and according to the pre-existing capabilities of each device, the image data that is to be exchanged may be converted before or after it is exchanged, or both. As described above, the determination of which device performs the conversion device is dictated by the image processing functionality that each device has prior to the start of the negotiation. Since the negotiation for exchange is limited by the pre-existing image processing functionality of each device, resulting negotiations can lead to a data transfer that is inefficient and time consuming.

Accordingly, the description of related art, including the description of the JetSend protocol, in the present Application is not seen to teach or even to suggest at least the feature of exchanging program code that implements image processing functionality between first and second devices in a case where the negotiated assignment indicates that functionality in one of the first and second devices is needed by the other of the first and

- 10 -

second devices, and/or the feature of negotiating an assignment of image processing functionality that effects an efficient image transfer.

Shintani is not seen to remedy the deficiencies of Applicant's alleged admissions of prior art. Shintani is cited for the single premise that it discloses device class modules that include information concerning relative processing power of the first and second devices. The portions of Shintani that are cited (i.e., elements E1 and E3 of Figure 2A and col. 9, lines 15 to 17 and lines 20 to 22, in which elements E1 and E3 are discussed) are seen to describe that elements E1 and E3 are DC-to-DC converters that regulate current/voltage to printer section 111 and camera section 203 of Figure2A.

The regulation of current/voltage, which is performed by the DC-to-DC converters E1 and E3 in order to supply an appropriate amount of current/voltage to printer and camera sections 111 and 203, respectively, is in no way seen to teach or even to suggest the features of Claim 1.

Therefore, for at least the foregoing reasons, Claim 1 is believed to be in condition for allowance. Further, Applicant submits that Claims 11 and 14 are also believed to be in condition for allowance for at least the reason that the cited portions of the present Application and/or Shintani are not seen to teach or even to suggest negotiating the exchange, or the exchanging, of program code that implements image processing functionality as discussed above with respect to Claim 1.

The remaining claims, which depend from an independent claim, are believed to be in condition for allowance for at least the reasons mentioned above. Because each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, California office by telephone at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1.   (Amended) A method for negotiating an exchange of image processing functionality between first and second devices over a bi-directional communication link, comprising the steps of:

[exchanging device class modules between the first and second devices, the device class modules including information concerning relative processing power of the first and second devices;]

exchanging function code descriptions between the first and second devices, the function code descriptions including information concerning functionality respectively available in the first and second devices, together with information concerning whether such functionality is exportable to other devices;

negotiating an assignment of image processing functionality between the first and second devices, with the overall image processing functionality effecting an efficient image transfer between the first and second devices; and

exchanging program code that implements image processing functionality between the first and second devices in a case where the negotiated assignment [image processing functionality] indicates that functionality in one of the first and second devices is needed by the other of the first and second devices, wherein the program code is executed by the other of the first and second devices.

8.   (Amended) A network interface card for interfacing between an image processing device [peripheral] and a local area network, said network interface card including:

a network protocol stack for interfacing between the local area network and the network interface card, and for receiving network communications directed to the image processing device [peripheral];

a device-specific application layer that provides device-specific image processing functionality for driving the image processing device [peripheral], the device-specific application layer receiving network communications directed to the [peripheral] device from the protocol stack; and

a negotiation controller for negotiating an exchange of image processing functionality with another [between a second] device on the local area network, the negotiation controller being programmed with process steps according to [for carrying out] the method of any one of Claims 1 to 7.

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